

ZOLOTAREV, S.M.

Latest in the technology of the processing of corn with the separation  
of germ. Izv.vys.ucheb.zav.:pishch.tekh.no.4:82-89 '60.  
(MIRA 13:11)

1. Odesskiy tekhnologicheskii institut imeni I.V.Stalina. Kafedra  
tekhnologii mukomol'nogo proizvodstva.  
(Corn (Maize))



CA

15

An experiment in decreasing filtration of water into the ground by means of sodium chloride. S. N. Zolotarev... and L. I. Dashevskii. *Pedology* (U. S. S. R.) 1939, No. 6, 75-82 (in English, 82). - Treating storage ponds and irrigation canals with NaCl causes the channels to become clogged and prevents losses of water by percolation. In chernozem it is necessary to add enough NaCl to equal the exchange capacity to a depth of 20 cm. I. S. B. de

ASRSLA METALLOGICAL LITERATURE CLASSIFICATION

"APPROVED FOR RELEASE: 03/15/2001

CIA-RDP86-00513R002065410006-7

APPROVED FOR RELEASE: 03/15/2001

CIA-RDP86-00513R002065410006-7"

ZOLOTAREV, S.N.; DASHEVSKIY, L.I.

Results of an experiment at a permanent field station for the  
reclamation of saline waste lands in the Chu Valley. Trudy Otd.  
pochv. KirWAN SSSR no.4:67-73 '53. (MLBA 9:11)  
(Chu Valley--Alkali lands)

ZOLOTAROV, S.N.; DASHNEVSKIY, L.I.

[Our experience in reclaiming abandoned saline land on the Frunse State Beet Farm] Opyt oboznenia borsovykh zasolennykh zemel' v zveklosovkhose imeni Frunse. Frunse, Kirgizskoe gos. izd-vo, 1953.  
26 p. (MIRA 10:2)

(Frunse Province--Agriculture)

ZOLOTAREV, T.L.

Book reviews. Izv. AN SSSR. Energ. i transp. no. 3:144-148 My-Je  
1965. (MIRA 18:12)

ZOLOTAREV, V.A., inzh.

Investigating structural and engineering properties of  
asphalt concrete. Avt.dor.i dor.stroi. no.1:90-96 '65.  
(MIRA 18:11)



L 39551-66 EWT(1)/EEG(k)-2/T IJP(c) AT/GD

ACC NR: AP6008937

SOURCE CODE: UR/0202/65/000/005/0007/0012

AUTHOR: Agayev, Ya.; Voronkova, N. M.; Zolotarev, V. F.

ORG: none

TITLE: Electric and photo-electromagnetic properties of semiconductors in  
alternating magnetic fields

SOURCE: AN TurkmSSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh  
i geologicheskikh nauk, no. 5, 1965, 7-12

TOPIC TAGS: semiconductor, semiconductor research, alternating magnetic field

ABSTRACT: The mechanism of carrier dispersion and its effect on the electric  
and photoelectric properties of InSb and GaAs placed in an alternating magnetic  
field are theoretically investigated. It is found that: (1) Minimum ratio of the  
coefficients of power series of electric and photoelectric em's corresponds to the

Card 1/2

AGAYEV, Ya.; VORONKOVA, N.M.; ZOLOTAREV, V.F.

Electric and photoelectromagnetic properties of semiconductors  
in a variable magnetic field. Izv. AN Turk.SSR.Ser.fiz.-tekh.,  
khim. i geol.nauk no.5:7-12 '65.

(MIRA 18:11)

ZOLOTAREV, V.M. (Moscow)

Closeness of the distributions of two sums of independent random  
variables. *Tecr. veroliat. i ee prim.* 10 no.3:519-526 '65.

(MIRA 18:9)

L 15256-66 ENT(1) LJP(c)  
ACC NR: AP5027675

SOURCE CODE: UR/0061/66, 119/005/0509/0812

AUTHOR: Zolotarev, V. M.; Kislovskiy, L. D.

ORG: none

31  
30  
8

TITLE: The feasibility of studying band contours by minimum total internal reflection spectrophotometry

SOURCE: Optika i spektroskopiya, v. 19, no. 5, 1985, 809-812

TOPIC TAGS: absorption spectrum, internal reflection spectrum, band spectrum

ABSTRACT: The authors showed in an earlier paper (Opt. i spektr., 19, 623, 1985) that in the  $0.0002 < k < 0.2$  range of the absorption index, the reflectivity  $R_{\perp}(\lambda)$  for a constant angle of the total internal reflection coincides almost completely with the transmissivity  $T(k)_d$  for a given constant thickness. The present article investigates theoretically the shapes of Lorentz absorption band in the spectrum obtained by minimum total internal reflection (MTIR). Calculated MTIR curves are in very good agreement with the corresponding Lorentz shape of bands found in the absorption spectrum. The theoretical curve

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UDC: 535.399

L 15256-66

ACC NR: AP5027675

for the dibutylphthalate spectrum is in excellent agreement with experimental data by J. Fahrenfort (Spectrochim. Acta, 17, 699, 1961) which used an AgCl prism. Author thank A. N. Terenin for his interest in the investigation. Orig. art. has: 7 figures.

SUB CODE: 20 / SUBM DATE: 14Jul65 / ORIG REF: 001 / OTH REF: 006

Card 2/2 *SC*

ZOLOTAREV, Ye. K.

Dependence of the changes in entropy in the hydration of  
monoatomic cations on their electron affinity and radius.  
Zhur. fiz. khim. 39 no.4:884-885 Ap '65.

1. Gor'kovskiy politekhnicheskii institut. Submitted Oct. 17,  
1963. (KINA 19:1)

L 15116-66 EWT(d) LIP(c)  
ACC NR: AP6021954

SOURCE CODE: UR/0052/66/011/001/0108/0119

AUTHOR: Zolotarev, V. M. (Moscow)

ORG: none

TITLE: Absolute estimate of the remainder in the central limit theorem

SOURCE: Teoriya veroyatnostey i yeye primeneniya, v. 11, no. 1, 1966, 108-119

TOPIC TAGS: central limit theorem, random process, distribution function

ABSTRACT: Let  $\xi_1, \dots, \xi_n$  be independent random variables with zero means, dispersions  $\sigma_1^2, \dots, \sigma_n^2$ , and finite absolute moments of the third order  $\beta_1, \dots, \beta_n$ . Let us designate

$$\sigma^2 = \sum \sigma_i^2, \quad \beta = \left( \sum \beta_i \right) / \sigma^3,$$

and let  $F(x)$  be the distribution function of the sum  $\xi_1 + \dots + \xi_n$ , and  $\Phi(x)$  be the distribution function of the normal (0,1) law. Further let  $\varepsilon$  be equal to a fixed positive number and  $D(\varepsilon)$  stand for the last value for which

$$\sup_x |F(x\varepsilon) - \Phi(x)| < D(\varepsilon)\varepsilon.$$

Cord 1/2

ACC NR: AP6032275

(N)

SOURCE CODE: UR/0020/66/170/0012/0317/0319

AUTHOR: Zolotarev, V. M.

ORG: none

TITLE: Application of the method of disturbed total internal reflection to the measurement of absorption and dispersion of liquid water in the region of the valence oscillation band

SOURCE: AN SSSR, Doklady, v. 170, no. 2, 1966, 317-319

TOPIC TAGS: <sup>electronic computer</sup> light absorption, light reflection, light dispersion, water, refractive index, absorption coefficient/ Ural electronic computer

ABSTRACT: In view of the contradictory data on the optical constants of water, the author has undertaken to determine the refractive index (n) and the absorption coefficient (k) near the valence oscillation band of water by means of a new independent.. method, that of disturbed total internal reflection, described by the author in an earlier paper (with L. D. Kislovskiy, Optika i spektroskopiya v. 19, 623, 1965). The measurements were made with an attachment (SP-122) for the Hilger H-800 spectrometer, described in Zhurn. prikl. spektroskop. v. 5, no. 4, 341, 1966. Duplicate measurements were made for each of three angles of incidence 35, 40, and 45°. The values of n and k were determined with the aid of tables compiled with the aid of the Ural electronic computer. The accuracies of n and k were 0.5 and 5% respectively in the long-wave wing of the band and 5 and 25% in the short-wave wing. The results show that the ab-

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UDC: 535.375: 546.212



ACC NR: AF6032275

2  
sorption band of the valence oscillations of liquid water is a complicated one and consists of three strong bands with maxima at 3320, 3420, and 3490  $\text{cm}^{-1}$ , as well as a weak band at 3600  $\text{cm}^{-1}$  (and possibly also at 3200  $\text{cm}^{-1}$ ). The frequencies of the maxima of the bands as given by various authors are compared. It is concluded that the method of disturbed total internal reflection is quite promising for quantitative data on the absorption and dispersion of aqueous systems, since it has better accuracy and resolution than existing methods. The author thanks N. G. Bakhshiyev for a discussion of the results and B. S. Neporent for interest in the work. This report was presented by Academician A. N. Terenin 31 December 1965. Orig. art. has: 1 figure and 1 table.

SUB CODE: 20/ SUBM DATE: 21Dec65/ ORIG REF: 008/ OTH REF: 008

Card 2/2 bc

ZOLOTOREV, PROF. T.

Automatic Control

On the road to advanced technology. Rabotnitsa 31 no. 3. 1953

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

ZOLOTAREV, T., doktor tekhn.nauk, prof.

Electric ocean. Znan.sila 37 no.4:4-9 Ap '62. (MIRA 15:4)

1. Moskovskiy energeticheskiy institut.  
(Solar energy) (Electric power production)

ZOLOTAREV, T., doktor tekhn.nauk, prof.

Technological progress is the most important condition for the  
successful carrying out of the seven-year plan. Komm.Voeruzh.511  
1 no.4:8-15 N '60. (MIRA 14:8)  
(Russia--Industries)

ZOLOTAREV, T., RUSETSKIY, A.

Electricity

Where electric current goes. Znan. sila no. 3 '52

Monthly List of Russian Accessions, Library of Congress, July 1952. Unclassified.

ZOLOTAREV, T. K., (Prof. & Dr. of Technical Sciences)

Wrote about production of new types of machines

Soviet Source: H; Komsomol'skaya Pravda 29 April '51, Moscow

Abstracted in USAF, "Treasure Island", on file in Library of Congress, Air Information Division, Report No. 91983.

ZOIOTAREV, T., doktor tekhn.nauk

Not waste but raw materials. Izobr. i rats. no. 7:6-7 J1 '61.  
(MIRA 14:6)

(Industrial management)  
(Industrial wastes)

ZOLOTAREV, T., doktor tekhn.nauk, prof.

In the name of the 22d Congress of the CPSU. Znan. sila 36  
no.10:3-5 0 '61. (MIRA 16:12)



ZOLOTAREV, T. [L.]

"Hydro-Electric Centrals in Hydro-power systems."

Dissertation for Doctor of Technical Sciences, Power-Engineering Institute im.  
Khrzhizhanovskiy (ENIN) Acad. Sci. USSR

Subject: Hydropower-engineering

Gidrotekhnicheskoye, stroitel'stvo, 12, 1946

ZOLOTAREV, T. L., Prof., Mbr., Sector Water Economy Problems, Dept. Tech. Sci.,  
Acad. Sci. -1948- Dr. Technical Sci.

"Hydro-Electric Stations," bk., Moscow, 1947.

ZOLOTAREV, T. L.

"Standardized Hydro-Power Symbols", (Yedinyye gidroenergeticheskiye oboznacheniya),  
Moscow Order of Lenin Power Inst imeni V. M. Molotov, Moscow, 1948, 22 pp.

ZOLOTAREV, T. L. Prof

USSR/Engineering

Hydroelectric Plants

Power Plants - Equipment

Apr 49

"Problems of Water-Power Science," Prof T. L. Zolotarev, Izv Tekh Sol, 3/2 pp

"Gidrotekhn Stroi" No 4

Discusses establishment of a new field of technology which has developed in connection with the construction of various large hydroelectric power plants. Claims that modern water-power technology requires close relationship between hydrology, electric power, geology, and knowledge of power equipment. Describes various water-power experiments.

45/49136

USSR/Engineering (Contd)

Apr 49

Gives two tables and five diagrams of experimental results.

45/49136

ZOLOTAREV, T. L.

Water power; textbook. Moskva, Gos. energ. izd-vo, 1950- maps.  
(51-37427).

TC147.26

ZOLOTAREV, T.L.

Ot Volkhova do Volgi. [From Volkhov to Volga]. (Nauka i zhizn, 1951, no. 2, p. 21-25, illus., sketch-map of the Volga-Don Canal). DLC: Q4.N43

SO: SOVIET TRANSPORTATION AND COMMUNICATIONS, A BIBLIOGRAPHY, Library of Congress Reference Department, Washington, 1952, Unclassified.

ZOLOTAREV, T.L., doktor tekhnicheskikh nauk, professor; BESCHINSKIY,  
A.A., nauchnyy redaktor; KANTHR, A.I., redaktor.

[Great hydraulic construction projects] Velikoe gidrotekhnicheskoe stroitel'stvo, Moskva, Gos. izd-vo kul'turno-prosvetitel'noi lit-ry, 1952. 141 p. [Microfilm] (MLRA 7:12)  
(Hydraulic engineering)

USSR/Electricity - Hydroelectric Stations Jan 52  
Transmission, Power

"Electrification of the Entire Country," Prof T. L.  
Zolotarev, Dr Tech Sci

"Munka i Zhizn'" No 1, pp 6-9

More than 100 billion kw-hr of elec power were  
produced by the USSR in 1951. The Kuybyshev and  
Stalingrad hydroelec stations will produce more  
than 20 billion kw-hr per yr, of which more than  
half will be transmitted to Moscow, 5.2 billion  
will be transmitted to the Volga regions, 1.2  
billion to the central black-earth regions, and  
203T16

USSR/Electricity - Hydroelectric Stations Jun 52  
(Contd)

3.5 billion for irrigation and farm electrification  
in the Transvolga and Caspian regions. In the  
Kuybyshev-Moscow line (3-phase, 400-kv ac), the  
towers will be spaced 450-500 m apart and the in-  
sulators on each tower will weigh about 3 tons.  
The Kuybyshev-Moscow line will require the suspen-  
sion of 250,000 tons of wire. Discusses unified  
high-voltage network.

203T16

ZOLOTOREV, T. L.



SHATELEN, M. A., ZALESSKIY, A. M., LEBEDEV, V. P., TELESHEV, B. A.,  
 ZHEKUBIN, S. M., ARKHANGEL'SKIY, F. K., BAUMGOL'TS, A. I.,  
 ZOLOTAREV, T. L., BUSHUYEV, M. N., PROSKURYAKOV, V., GURVICH, A. N.,  
 YES'MAN, A. I., SHVETS, F. T., KONDRAT'YEV, G. M., USOV, S. V.,  
 ALEKSEYEV, A. YE., BOLOTOV, V. V., TIKHODEYEV, I. M., GERASIMOV, N. V.,  
 MELENT'YEV, L. A., LEVIT, G. O., ORLOVSKIY, A. V., VEDIKHOV, V. M.,  
 STYRIKOVICH, M. A., GREYNER, L. K., NIKIFOROV, V. V., SOLODOVNIKOV, G. S.,  
 SMIRNOV, S. P., ZOLOTAREVA, N. A., KALEKINA, N. M., GOL'DMERSHTEYN, T. L.,  
 KLEBANOV, L. D., SALUYEV, N. F., ZAIKO, A. A., MARTEKS, M. F.

A. S. Rumyantsev, Obituary. Elektrichestvo, No. 2, 1952.

SO: Monthly List of Russian Accessions, Library of Congress, July 1952 1977/ Uncl.

1. MESHKOV, V. V.: IVANOV, A. P.: KIRILIN, V. A.: GLAZUNOV, A. A.: FANTYUSHIN, V. S.:  
~~ZOLOTAREV, T. L.:~~ BABIKOV, M. A.: FABRIKANT, V. A.: ZHDANOV, G. M.: PEREKALIN, M. A.:  
KOMAR, V. G.: TALITSKIY, A. V.

2. USSR (600)

4. Kaganov, I. L. 1902-

7. Professor I. L. Kaganov; fiftieth birthday anniversary.  
Elektrivhestvo, No. 11, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

ZOLOTAREV, T. L.

Electrification

Electrification of the whole country. Nauka i zhizn', 19, No. 1, 1952

Monthly List of Russian Accessions, Library of Congress, March, 1952. Unclassified.

ZOLOTAREV, T. L.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the field of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

<u>Name</u>	<u>Title of Work</u>	<u>Submitted by</u>
Venikov, V. A.	"A Dynamic Model of a	Moscow Power Engineering
Zolotarev, T. L.	Hydroelectric Power Sys-	Institute imeni V. M.
Ivanov-Smolenskiy, A. V.	tem"	Molotov.

SO: W-30604, 7 July 1954

ZOLOTAREV, T.L., professor, doktor tekhnicheskikh nauk.

Estimated power requirements of hydroelectric power stations.  
Trudy Inst.energ.AN BSSR no.1:9-31 '54. (MLBA 9:8)  
(Hydroelectric power stations)

ZOLOTAREV T.L.

KHACHATRYAN, A.S.; ABADZHEV, Yu.G.; ZOLOTAREV, T.L.; KONDAKHCHIAN, V.S.;  
ATABEKOV, G.I.; GABASHVILI, N.V.; SISOTAN, G.A.; NAKHARADZE, G.K.;  
VORONIN, A.V.; GORTINSKIY, S.W.; KARSULIDZE, A.N.

Professor A.IA Ter-Khachaturov. A.S.Khachatrian and others.

Elektrichestvo no.8:90 Ag '54.

(MLRA 7:8)

(Ter-Khachaturov, Artemii Iakovlevich, 1884-

)

ZOLOTAREV, T. L.

112-1-336

Translation from: Referativnyy Zhurnal, Elektrotehnika, Nr. 1, 1957, p. 56

AUTHOR: Zolotarev T.L.

TITLE: Energy balance of a hydroelectric power station (Energeticheskiy balans gidroelektrostantsii)

PERIODICAL: Tr. in-ta energetiki AN BSSR, 1955, issue 2, pp 3-20, (BSSR)

ABSTRACT: A classification of power losses is given; various methods of determining the operating efficiency of a hydroelectric power station are considered. The author classifies these losses, on the basis of the prevailing conditions, into rated, systemic, and station losses, and, on the basis of their nature, into: 1) water discharge losses due to a partial reduction of the water discharge, evaporation, seepage, or leakage; 2) head losses (losses connected with changes in the level of the longitudinal profile of the stream, head losses caused by friction, local losses occurring along the water course, and head losses caused by partial diversion of water power; 3) energy losses occurring at the hydroelectric power plant. A chart for the calculation of head, stream flow, and energy losses is

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2010 TAREV, T.

LEVIT, Grigoriy Osipovich, inzhener; BEL'KIND, L.D., doktor tekhnicheskikh nauk, redaktor; GLAZUNOV, A.A., doktor tekhnicheskikh nauk, redaktor; GOLUBTSOVA, V.A., kandidat tekhnicheskikh nauk, redaktor; ZOLOV'YEV, T.L., doktor tekhnicheskikh nauk, redaktor; IZRAASH, S.V., doktor tekhnicheskikh nauk, redaktor; KIRILLIN, V.A., redaktor; KONFEDERATOV, I.Ya., doktor tekhnicheskikh nauk, redaktor; PETROV, G.M., doktor tekhnicheskikh nauk, redaktor; SIROTINSKIY, L.I., doktor tekhnicheskikh nauk, redaktor; SOLOV'YEV, I.I., professor, redaktor; STYRIKOVICH, M.A., redaktor; SHNITBERG, Ya.A., kandidat tekhnicheskikh nauk, redaktor; SHEGOLYAYEV, A.V., redaktor; AMTIX, I.V., redaktor; FREDKIN, A.M., tekhnicheskij redaktor

[Outline history of power engineering in the U.S.S.R.] Ocherki po istorii energeticheskoi tekhniki SSSR. Red. komissiya L.D. Bel'kind i dr. Moskva, Gos. energ. izd-vo. No. 3. [Power congresses and conferences] Energeticheskij s'ezd i konferentsii. 1956. 98 p.

(MLRA 10:4)

1. Moscow. Moskovskiy energeticheskij institut. 2. Chlen-korrespondent AN SSSR. (for Kirillin, Styrikovich, Shcheglyayev)  
(Power engineering--Congresses)



ZOLOFAREV, T.L.

CHILKIN, M.G.; MESHKOV, V.V.; GOLUBTSOVA, V.A.; SIROFINSKIY, L.I.; VENIKOV, V.A.;  
ZOLOFAREV, T.L.; KONFEDERATOV, I.Ya.; SHNEYDERMAN, Ya.A.; VESHLOVSKIY, O.N.

Professor L.D.Bel'kind. Elektrichestvo no.8:93-94 Ag '56. (MLRA 9:10)  
(Bel'kind, Lev Davidovich, 1896-)

ZOLOTAREV, T.L., doktor tekhnicheskikh nauk, professor.

Estimated model hydrograph. Trudy MEI no.19:67-79 '56.

(MIRA 10:1)

1. Kafedra gidroenergetiki.

(Hydrography)

ZOLOTAREV, T. L. (Doctor of Technical Sciences)

Moscow. Energeticheskii institut

Istoriya energeticheskoy tekhniki SSSR v trekh tomakh. t. 1: Teplotekhnika  
(History of Power Engineering in the USSR in Three Volumes. v. 1: Heat Engineering  
Moscow, Gosenergoizdat, 1957. 479 p. 5,000 copies printed.

Ed.-Compiler: Konfederatov, I.Ya., Doctor of Technical Sciences; Authors: Badyl'kes, I.S., Doctor of Technical Sciences; Belindkiy, S.Ya., Candidate of Technical Sciences; Gimmel'farb, M.L., Candidate of Technical Sciences; Kalafati, D.D., Candidate of Technical Sciences; Kertselli, L.I., Professor; Kovalev, A.P., Doctor of Technical Sciences; Konfederatov, I.Ya., Doctor of Technical Sciences; Lavrov, V.N., Doctor of Technical Sciences; Lebedev, P.D., Doctor of Technical Sciences; Lukinskiy, V.V., Doctor of Technical Sciences (deceased); Petukhov, B.S., Doctor of Technical Sciences; Satanovskiy, A.Ye., Doctor of Technical Sciences; Semenenko, N.A., Doctor of Technical Sciences; Smel'nitskiy, S.G., Candidate of Technical Sciences; Sokolov, Ye.Ya., Doctor of Technical Sciences; Chistyakov, S.F., Candidate of Technical Sciences, and Shcheglyayev, A.V., Corresponding Member, USSR Academy of Sciences; Editorial Board of set: Bel'kind, L.D., Doctor of Technical Sciences; Glazunov, Doctor of Technical Sciences; Golubtsova, V.A., Doctor of Technical Sciences; Zolotarev, T.L., Doctor of Technical Sciences; Izbash, S.V., Doctor of Technical Sciences; Kirillin, V.A., Corresponding Member, USSR Academy of Sciences;

Konfederatov, I.Ya., Doctor of Technical Sciences; Margulova, T.Kh., Doctor of Technical Sciences; Meshkov, V.V., Doctor of Technical Sciences; Petrov, G.W., Doctor of Technical Sciences; Sirotnitskiy, L.I., Doctor of Technical Sciences; Styrikovich, M.A., Corresponding Member, USSR Academy of Sciences; and Shneyberg, Ya.A., Candidate of Technical Sciences. Ed.: Matveyev, G.A., Doctor of Technical Sciences; Technical Ed.: Medvedev, L.Ya.

**PURPOSE:** The book is intended for technicians in all branches of heat engineering.

**COVERAGE:** This book presents the development of the basic branches of heat engineering in the Soviet Union and it is the first volume of 3 volumes entitled History of Power Technology in the USSR. The first chapter gives a concise history of the development of heat engineering from its very beginning to the middle of the 19th Century when the fundamentals of the theoretical heat engineering were established. A detailed description of the development of heat engineering in pre-Revolutionary Russia is given in Ch. 2 to 5 and its status before 1917 is described. In the main part of the volume, Ch. 6 to 16, the development of various branches of the Soviet heat engineering is presented. The theoretical fundamentals of heat engineering, of manufacturing boilers, turbine installations of heat power plants, district heating, heat control, automation of thermal processes, and cooling techniques are covered extensively. Each chapter is supplemented with a bibliography. The book is illustrated with photographs, charts and diagrams, worked out by the authors of the respective chapters. At the end of the book there is a chronological list of significant events in the development of heat engineering.

~~ZOLOTAROV, T.L.~~ ZOLOTAROV, T.L. prof., doktor tekhn. nauk, red.; FRINKIN, A.M., tekhn. red.

[Power resources of the world; reports on development of power resources in individual countries from 1950 to 1954 at the Fifth World Power Conference] Energetika mira; doklady o razvitii energetiki ot del'nykh stran za 1950-1954 gg. na piatoi Mirovoi energo-ticheskoi konferentsii. Pod red. T.L. Zolotareva. Moskva, Gos. energ. izd-vo, 1957. 365 p. (MIRA 11:8)

1. World Power Conference. 5th, Vienna, 1956.  
(Power resources--Congresses)

ZOLOTAREV, T.I.; LIFSHITS, L.S.; RUDNEV, A.K.; TARASENKO, Yu.M.

Increasing the dynamic stability of electric power systems.  
Inzh.-fiz. zhur. no. 6:77-84 Je '58.

(MIRA 11:7)

1. Energeticheskiy institut, Moskva.  
(Electric power plants)

ZOLOTAROV, Teodor Lazarevich, prof., doktor tekhn.nauk; ISTANKINA, T.F.,  
red.; ATROSHCHENKO, L.Ye., tekhn.red.

[World power resources] Energetika mira. Moskva, Izd-vo  
"Znanie," 1959. 34 p. (Vsesoiuznoe obshchestvo po rasprostra-  
nieniu politicheskikh i nauchnykh snanii. Ser.4, Nauka i  
tekhnika, no.16) (MIRA 12:8)  
(Power resources)

8(6)

PHASE I BOOK EXPLOITATION

SOV/2392

Kommunisticheskaya partiya Sovetskogo Soyuza. Vysshaya partiynaya shkola

Energetika promyshlennosti; uchebnoye posobiye dlya vysshikh partiynykh shkol (Industrial Power; Textbook for Party Schools of Higher Education) Moscow, Izd-vo VPSH i AON pri TsK KPSS, 1959. 455 p. Errata slip inserted. 30,000 copies printed.

Ed. (Title Page): T.L. Zolotarev, Doctor of Technical Sciences, Professor; Ed. (Inside book): V.V. Nikolayev; Tech. Ed.: K.P. Voronin; General Ed.: G.I. Pogodin-Alekseyev, Doctor of Technical Sciences, Professor.

PURPOSE: This is a textbook for students of communist party schools of higher education taking a course in Industrial Power.

COVERAGE: The book is a collective effort of a number of specialists in various branches of power engineering. The authors cover the fundamentals of heat, water and electric power. They discuss the construction and operation of boiler units, steam engines and turbines, gas turbines, water turbines, thermal power plants, and

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Industrial Power (Cont.)

SOV/2392

atomic and hydroelectric power plants. They also discuss fundamentals of electrical engineering and the operation of d-c and a-c machines, transformers, rectifiers and electric drives. Power resources in the USSR and circuits for supplying power to industries are also discussed. Chapters 2 and 4 were written by Professor L.I. Kertselli; Chapter 3 by B.S. Belosel'skiy, Candidate of Technical Sciences; Chapter 5 by Docent I.N. Kirsanov, Candidate of Technical Sciences; Chapter 6 by Professor V.V. Uvarov, Doctor of Technical Sciences; Chapter 7 by Docent V.Ya. Ryzhkin, Candidate of Technical Sciences; Chapter 8 by Docent A.M. Baklastov, Candidate of Technical Sciences; Chapter 9 by Docent P.A. Petrov, Candidate of Technical Sciences; Chapters 10 and 11 by Professor T.L. Zolotarev, Doctor of Technical Sciences; Chapters 12, 13, 14 and 15 by Professor M.A. Perekalin; Chapter 16 by Docent A.P. Karpenko, Candidate of Economic Sciences; Chapter 17 by Docent A.A. Fedorov, Candidate of Technical Sciences; and Chapter 18, by Docent B.A. Knyazevskiy, Candidate of Technical Sciences. There are 31 references, all Soviet. References appear at the end of each chapter.

Card 2/15

ZOLOTAREV, T.L.; LIFSHITS, L.S.; RUDNEV, A.K.; TARASHENKO, Yu.M.

Possibilities of emergency regulation of the power of the  
hydraulic turbines. Nauch.dokl.vys.shkoly; energ. no.2:  
115-124 '59. (MIRA 13:1)

(Hydraulic turbines)

MURASHKO, Mikhail Grigor'yevich; GATILLO, Pavel Dmitriyevich; VELIKEVICH, Pavel Adamovich; VOYTEKHOVSKAYA, Emma Aleksandrovna; BLIZNYAN, Ye.V., prof., doktor tekhn.nauk, zasluzhennyy deyatel' nauki i tekhniki [deceased]; ZOLOTAREV, T.L., prof., doktor tekhn.nauk, red.; MARIES, L., red.izd-va; VOLOKHANOVICH, I., tekhn.red.

[Cadastral survey of water-power resources of the White Russian S.S.R.; potential hydroelectric power resources] Vodnoenergeticheskii kadastr Belorusskoi SSR; potentsial'nye gidroenergoresursy. Pod red. T.L.Zolotareva. Minsk, Izd-vo Akad.nauk BSSR. Vol.1. 1960. 281 p. \_\_\_\_Maps. (MIRA 13:10)  
(White Russia--Hydroelectric power)

PHASE I BOOK EXPLOITATION

SOV/4747

Zolotarev, Teodor Lazarevich, and Yevgeniy Oskarovich Shteyngauz

Energetika i elektrifikatsiya SSSR v semiletke; po materialam XXI s'yezda KPSS  
(Power Engineering and Electrification in the USSR During the Seven Year Plan;  
Based on Data of the 21st Congress of the CPSU) Moscow, Gosenergoizdat, 1960.  
202 p. 3,000 copies printed.

Ed.: L.M. Gorodenskiy; Tech. Ed.: N.I. Borunov.

PURPOSE: This book is intended for the general reader who is concerned with the general economic development of the USSR and, in particular, the development of power engineering and electrification.

COVERAGE: The book is based on the materials of the 21st Congress of the Communist Party of the USSR and includes data on statistics and planning. The development of Soviet power engineering up to 1958 is reviewed in detail and basic indices are given for its expected growth during the 1959-1965 Seven Year Plan. Changes in the qualitative characteristics of power-engineering development in the Soviet Union are explained and discussed. The authors speak of the significance of power

Card 1/9

ZOIOTAREV, T.L., prof., doktor tekhn.nauk; LIFSHITS, L.S., kand.tekhn.  
nauk; TARASENKO, Yu.M., inzh.; RUDNEV, A.K., inzh.

Dynamic characteristics of a hydraulic unit and their  
simulation. Izv.vys.ucheb.zav.; energ. 3 no.5:144-151  
Mg '60. (MIRA 13:6)

1. Moskovskiy ordena Lenina energeticheskiy institut. Pred-  
stavlena kafedroy gidroenergetiki.  
(Hydroelectric power stations)

SHVETS, Ivan Trofimovich, akademik; BUKSHFON, Il'ya Davidovich; KIRAKOVSKIY, Nikolay Feliksovich, dotsent; MARKOVSKIY, Filipp Titovich, kand. tekhn. nauk, dotsent; PERKOV, Vasilii Gerasimovich, kand. tekhn. nauk, dotsent; ZOLOTAREV, T.L., doktor tekhn. nauk, prof., dotsent; MIKLA-SHEVICH, G.P., kand. dotsent; RIKBERG, D.M., red.; GORNOSTAYPOL'-SKAYA, M.S., tekhn. red.

[Electric power] Energetika. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 501 p. (MIRA 14:9)

1. Akademiya nauk USSR (for Shvets).  
(Electric power)

(Electric machinery)

LASINSKAS, M.; BURNEYKIS, I. [Burneikis, I.]; ZOLOTAREV, T.L., prof., doktor  
tehn. nauk, red.; ZALESKIS, T., red.

[Streamflow of the Neman River] Stok reki Nianunas (Neman). Pod  
red. T.L.Zolotareva. Kaunas, Izd-vl In-ta energetiki i elektrotokhn.  
AN Litovskoi SSR, 1961. 196 p. (MIRA 14:11)  
(Neman River—Hydrology)

ZOLOTAREV, T.I., prof., doktor tekhn.nauk

Determining fuel equivalents of hydroelectric power stations in  
an electric power system. Gidr. stroi. 31 no.1:26-27 Ja '61.

(MIRA 14:2)

(Electric power)

(Hydroelectric power stations)



ZOLOTAREV, Teodor L., egyetemi tanár, a muszaki tudományok doktora.  
(Moszkva)

Development of electrification in the Soviet Union. Ipari  
energia 2 no.8/9:169-174 Ag-8 '61.

MURASHKO, Mikhail Grigor'yevich; GATILLI, Pavel Dmitriyevich;  
VELIKEVICH, Pavel Adamovich; VOYTEKHOVSKAYA, Emiliya  
Aleksandrovna; ZOLOTAREV, T.L., prof., red.; BARABANOVA, Ye.,  
red. izd-va; SIDERKO, N., tekhn. red.

[Cadastral survey of water-power resources of the White Russian S.S.R.; potential hydroelectric power resources]Vodno-energeticheskii kadastr Belurusskoi SSR; potentsial'nye gidro-energoresursy. Minsk, Izd-vo Akad. nauk BSSR. Vol.2. [Album of cadastral graphs]Al'bom kadastryvykh grafikov. Pod red. T.L.Zolotareva. 1962. 217 p. (MIRA 16:1)  
(White Russia--Hydroelectric power)

ZOLOTAREV, T.L., doktor tekhn.nauk; OBREZKOV, V.I., kand.tekhn.nauk

Use of computers in the operation of hydroelectric power stations.  
Trudy MEI no.46:5-12 '63. (MIRA 18:3)

1. Kafedra gidroenergetiki Moskovskogo ordena lenina energeticheskogo  
instituta.

ZOLOTAREV, T.I., akademik, doktor tekhn.nauk; SEMENOV, V.V., kand.tekhn.nauk;  
BELYAYEV, L.S., kand.tekhn.nauk

Principal layout of the hydroelectric power engineering Laboratory  
of the Siberian Power Engineering Institute of the Academy of  
Sciences of the U.S.S.R. Trudy MEI no.46:97-120 '63.

(M RA 18:3)

1. AN Kazakhskoy SSR (for Zolotarav). 2. Kafedra gidroenergetiki  
Moskovskogo ordena Lenina energeticheskogo instituta (for Semenov).
3. Sibirskiy energeticheskiy institut AN SSSR (for Belyayev).

ZABOLOTSKIY, Yu.A., aspirant; ZOLOTAREV, T.L., doktor tekhn.nauk, prof.,  
rukovoditel' raboty

Strict and approximate modeling. Trudy MEI no.46:121-132 '63.

(MIRA 18:3)

1. Kafedra gidroenergetiki Moskovskogo ordena Lenina energeticheskogo  
instituta (for Zabelotskiy).

ZOLOTAREV, T.L., doktor tekhn. nauk; TAMADAYEV, A.M., kand. tekhn. nauk

Increase in the dynamic stability of a power system by  
supplying air to the runners of the hydraulic turbines.  
Elek sta. 35 no.10:34-38 0'64. (MIRA 17:12)

ZOIOTAREV, T.I.

Concerning the trends of scientific work of the power engineering institute of the Siberian branch, Academy of Sciences, USSR

Report to be submitted for the Conference on Electrification of Siberia ,  
Development and unification of its power systems. 7-9 December 1961.

ZOLOTAREV, T.L., doktor tekhn.nauk, prof.; KESMINAS, A.P., inzh.

Forecasting of the annual distribution of stream flow. Trudy MEI no. 35:  
157-164 '61. (MIRA 15:12)  
(Water power) (Hydroelectric power stations)



ZOLOTAREV, T.L., doktor tekhn.nauk, prof.

Hydroelectric power engineering in the U.S.S.R. from the plan  
of the State Commission for the Electrification of Russia  
down to the plan for the overall electrification of the country.  
Trudy MEI no.33:79-138 '60. (MIRA 15:3)  
(Electric power production)  
(Hydroelectric power stations).

GUTSON, M.G.; inzh.; ZOIOTAREV, T.L., prof.

Determination of the effect of a hydroelectric power station  
on fuel consumption in a system. Gidr. stroi. 32 no.12:47  
D '61. (MIRA 15:2)

(Hydroelectric power stations)

ZOLOTAREV, T.L., doktor tekhn.nauk; KAROL', L.A., kand.tekhn.nauk; SEYFULLA,  
D.O., kand.tekhn.nauk

Concerning the determination of fuel costs and heat contribution of  
hydroelectric power stations. Elektrichestvo no.12:83-84 D : '61.  
(MIRA 14:12)

1. Moskovskiy energeticheskiy institut.  
(Interconnected electric utility systems--Accounting) (Fuel)

ZOLOTAREV, T.L.

Development of hydroelectric power production in the U.S.S.R.  
Vop.ist.est. i tekhn. no.11:40-50 '61. (MIRA 14:11)  
(Hydroelectric power stations)  
(Electric power production)

STEKLOV, V.Yu.; ZOLOTAREV, T.L., prof., red.; BURLAK, I.N., red.;  
DOBROVOL'SKIY, V.N.

[Electrification is the road to communism] Elektrifikatsiya -  
put' k kommunizmu. Moskva, Izd-vo "Sovetskaya Rossiya," 1961.  
88 p. (Biblioteka "Nagladnaya agitatsiya, propaganda i  
khudozhestvennoe oformlenie," no.6) (MIRA 15:2)  
(Electrification)

ZOLOTAJEV, T.Ye.

Biological characteristics of some irrigated coniferous species.  
Izv.AN Kir.SSR.Ser.biol.nauk 4 no.3:57-77 '62. (MIRA 15:11)  
(FRUNZE--CONIFERAE)

ZOLOTAREV, T.Ye.

Future introduction of coniferous plants and landscape gardening  
in cities and populated places of Kirghizia. Izv. Ak. Kir. SSR,  
Ser. biol. nauk 5 no.2:29-30 '63. (MIHA 16:9)

ZOLOTAREV, T.Ye.

Generalizing the experience acquired in planting and trans-  
planting some coniferous species in the city of Frunze. Izv.  
AN Kir.SSR. Ser.biol.nauk 1 no.3:49-66 '59. (MIRA 13:7)  
(FRUNZE--CONIFERAE) (TREE PLANTING)



ZOLOTAREW, M.

"Control of vegetable tanning by the determination of acids and salts in vegetable tannins." (p.23) PRZEGLAD SKORZANY

(Centraine Zarady Przemyslu Garbarskiego, Orniczego i Artykulow Skorzanych)

Vol 8 No 1 January 1953

SO: East European Accessions List, Vol 3 No 8 August 1954

ZOIOTAREV, V.

Trade relations of socialist countries. Vneshtorg. 29 no.8:  
2-7 '59. (MIRA 12:11)

(Commerce)

ZOLOTAREV, V.

The economy of socialist countries is in a new stage of expansion.  
Vop. ekon. no.4:153-167 Ap '60. (MIRA 13:3)  
(Economic conditions)

ZOLOTAROV, Y.; PEKSHEV, V.

Development of the economy of the Federal People's Republic of  
Yugoslavia, Vop. ekon. no.3:116-128 Mr '58. (MIRA 11:4)  
(Yugoslavia--Economic conditions)

ZOLOTAREV, Y.

The growing might of the world socialist system. Vnesk. torg.  
29 no.3:2-6 '59. (MIRA 12:7)  
(Russia--Economic policy)

ZOLOTAREV, V.

Commercial contacts of the Soviet Union with socialist countries.  
Vnesh.torg. 27 no.11:44-52 '57. (MIRA 10:11)  
(Russia--Commerce)

ZOLOTAREV, V.

From "One hundred and twenty dishes made from potatoes" by A. Elenescu.  
Obshchestv.pit. no.1:16 Ja '63. (MIRA 16:4)  
(Cookery, Rumanian)

ZOLOTAREV, V.; VASIL'YEVA, Ye., red.; EDEL'SHTEYN, V.I., akad., red.;  
POKHLEEKINA, M., tekhn. red.

[Cucumbers] Ogurtsy. Pod red. V.I. Edel'shtsina. Moskva,  
Moskovskiy rabochii, 1963. 79 p. (MIRA 16:7)

1. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk im.  
V.I. Lenina (for Edel'shteyn).

(Cucumbers)



RAFIYENKO, N.I.; ZOLOTAREV, V.A.

Scheelite-bearing quartzites, a new genetic type of tungsten mineralization in the Kuznetsk Alatau. Dokl. AN SSSR 153 no.5:1178-1179 D '63. (MIRA 17:1)

1. Sibirskiy nauchno-issledovatel'skiy institut geologii, geofiziki i mineral'nogo syr'ya. Predstavleno akademikom V.S. Sobolevym.

82991  
S/181/60/002/008/010/045  
B006/B070

24.3600  
AUTHORS:

Zolotarev, V. F., Larichev, V. N.

TITLE:

p-n Junctions in Photosensitive PbS Films

PERIODICAL:

Fizika tverdogo tela, 1960, Vol. 2, No. 8, pp. 1741-1750

TEXT: The aim of the authors was to investigate the volt-ampere characteristics of PbS films and their temperature dependence, and to demonstrate the existence of p-n junctions. At present, there are two groups of theories for photoconductivity. One of the theories assumes that, on illumination, carriers are released where oxygen plays an important role as electron trap. The second theory is based on the idea that the photosensitive film consists of a series of p-n junctions. The minority carriers, liberated by light, diffuse to the junction and lower the potential barrier between p- and n-type regions, thus increasing the photocurrent. In order to find out the actual mechanism, an experiment suggested in Ref. 5 is used as the criterion. If potential barriers exist in the film, volt-ampere characteristics must be nonlinear.

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p-n Junctions in Photosensitive PbS Films

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Therefore, the authors investigated the volt-ampere characteristics of PbS films prepared in different ways. The electrical circuit of the arrangement is shown in Fig. 1. Typical characteristics (taken in light and darkness) are shown in Fig. 2. The form of the characteristics was found to be independent of the method of preparation of the film and to depend on the manner of activation. Some samples showed a photo-emf that is directly related to the non-linearity of the characteristic. Chemically prepared films of PbS showed linear characteristics for low temperature activation in vacuo (Fig. 4). Fig. 5 shows  $\ln \sigma$  ( $\sigma$  - the conductivity) as function of  $1/T$  for chemically prepared films for high temperature activation in air, taken in dark and in light of two intensities. The results are discussed in detail. Experiments proved that on high temperature activation in air PbS layers showed p-n-p junctions. Films, that were activated at low temperature or in vacuum, showed no potential barrier. The p-n junctions have shunts whose conductivity is independent of temperature and exposure of the sample. The magnitude of the shunt differs from film to film and also from junction to junction in the same film; the photo-emf is a consequence of the latter. The

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p-n Junctions in Photosensitive PbS Films

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B006/B070

surface impurity conductivity of an oxide film; or chains of free lead atoms can act as shunt. Three possible reactions, from which free lead may arise on high temperature activation, are given. The  $O^{2-}$  levels are traps for the photo electrons in p-type region; free lead atoms are traps for the photo holes in n-type region. The photoconductivity  $\Delta\sigma/\sigma$  depends mainly on the trap concentration and only slightly on the magnitude of the shunts. There are 7 figures and 11 references: 3 Soviet, 7 US, and 1 German.

SUBMITTED: February 28, 1959 (initially) and February 29, 1960  
(after revision)

IX

Card 3/3

28080

S/181/61/003/009/012/039  
B102/B138

24.3600 (1035, 1138, 1385)

AUTHORS: Zolotarev, V. F., and Nasledov, D. N.

TITLE: Noise of p-type indium antimonide in a magnetic field at room temperature

PERIODICAL: Fizika tverdogo tela, v. 3, no. 9, 1961, 2635 - 2639

TEXT: It has already (Refs.1 - 4, see below) been found that the noise of photomagnetic effect is of the same order of magnitude as thermal noise. The authors studied the photomagnetic-effect and current noises in thin (8 - 10 $\mu$ ) InAs monocrystals in a transverse magnetic field. The acceptor concentration of the crystals was  $5 \cdot 10^{16} \text{ cm}^{-3}$ . A special preamplifier with an equivalent noise input resistance of only 8 ohms was designed for the measurements (Fig. 1). The main amplifier used was a type 28-UM (28-III) with an input transformer removed for pass-band broadening. The noise voltage at the output was measured by means of an AM-1-50 (AN-1-50) analyzer. The output shunt of the analyzer had a capacitance of 1500uf. The measurements ( $H = 0-25,000 \text{ oe}$ ) indicated that the photomagnetic noises

Card 1/3

Noise of p-type indium antimonide...

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B102/B138

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have a white spectrum.  $U_{\text{noise}}^2 = 4kTRf$ , where R denotes the resistance of the specimen in the magnetic field. This formula has been experimentally verified several times. The specimens exhibited remarkable photomagnetic sensitivity, the noises, however, did not react to an illumination up to  $0.1 \text{ w/cm}^2$  when heated to  $800^\circ\text{C}$ , i. e. the photonic noise signal was well below the thermal noise signal. Current-noise measurements showed that both the noise-versus-frequency and the noise-versus-current curves were, in shape, independent of magnetic field strength. The curves  $\ln U_{\text{noise}} = g(\ln f)$  were parallel straight lines. For  $f \gg 10 \text{ kc/sec}$  the current noise can be described by the relation  $U_{\text{cur}}^2 = \frac{AR^2 I^2}{f} \Delta f$ ; the constant A was of the order of  $10^{-10}$ . The small deviations from this law observed were attributed to the effects of the contacts. The excess noise is due to conductivity fluctuations induced by fluctuations of the Fermi level. The relation between minority and majority carriers is important for that kind of

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20080

Noise of p-type indium antimonide...

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B102/B138

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noise, its amount being determined by the fluctuations of the majority carriers in the semiconductor. If the currents are of sufficient strength, the noise current reaches a sort of saturation, the cause of which has hitherto not been explained. There are 6 figures and 9 non-Soviet references. The four most recent references to the English-language publications read as follows: Ref. 1: S. J. Nicolosi. Electr. Eng., 31, 48, 1958. Ref. 2: P. Kruse. J. Appl. Phys., 30, no. 5, 770, 1959. Ref. 3: S. Kurnick. J. Appl. Phys., 27, no. 3, 278, 1956. Ref. 4: P. Kruse. Electronics, 33, no. 13, 62, 1960.

ASSOCIATION: Fiziko-tekhnicheskii institut im. A. F. Ioffe AN SSSR Leningrad (Physicotechnical Institute imeni A. F. Ioffe AS USSR)

SUBMITTED: April 3, 1961

Carl 6/3

24.2200 (1144, 1147, 1164, 1035)

26.2421

30775  
S/181/61/003/011/008/056  
B102/B138

AUTHORS: Zolotarev, V.F., and Nasledov, D. N.

TITLE: Photomagnetic effect in p-type InSb at room temperature

PERIODICAL: Fizika tverdogo tela, v. 3, no. 11, 1961, 1306-1313

TEXT: Photomagnetic effect (ph. m. e.) in p-type InSb was measured at room temperature and at impurity concentrations from  $1.2 \cdot 10^{16}$  to  $1.3 \cdot 10^{17} \text{ cm}^{-3}$  in fields of 600 to 16,000 oe. The photomagnetic e. m. f. was measured by means of a sensitive 28 IM (28IM) amplifier. The specimens were illuminated by a hot point ( $800^{\circ}\text{C}$ ) with an intensity of  $I_0 = 8 \cdot 10^{-3} \text{ w/cm}^2$ . The light flux could be modulated sinusoidally with a frequency of 800 cps. The specimens,  $0.6 \cdot 2 \cdot 6 \text{ mm}^3$  large, were etched with CP-4 (SR-4). The lux-volt characteristics were found to be linear between  $8 \cdot 10^{-5}$  to  $8 \cdot 10^{-3} \text{ w/cm}^2$  light intensity. From the straight lines  $H^2/i_s^2 = f(H^2)$  the electron

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X



Photomagnetic effect in p-type ...

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mobility was determined using the relation  $\mu_{phm} = \frac{\sqrt{1+b_0}}{H_1^2} \cdot 10^8 \text{ cm}^2/\text{v}\cdot\text{sec.}$

The values determined in this way differ from those calculated from  $R_0$  and  $\sigma_0$  (Hall coefficient and conductivity at room temperature), which are denoted as  $\mu_e$ . In Fig. 3 the ratio  $\mu_{phm}/\mu_e$  is shown as a function of impurity concentration  $p_1$  (acceptor concentration). All specimens showed a linear dependence of photomagnetic e. m. f. and  $H$  for weak fields. For thick specimens ( $d \gg l_d$ ) the short-circuit current is given in Ref 5

here by

$$i_s = (\mu_e + \mu_p) \frac{e H_1^2 d}{1 + \frac{v_H^2}{c^2}} \quad (6)$$

and the ambipolar-diffusion length by

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X

Photomagnetic effect in p-type ...

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$$r_s = \frac{l_d(1+\alpha)^{1/2}}{\left(\frac{1}{\tau_n} + \frac{b\alpha}{\tau_p}\right)^{1/2}} \quad (7)$$

if the relaxation time is energy-dependent. If it is not,

$$l_s = \left(1 + \frac{1}{b}\right) \frac{\alpha l_d \mu_n H^2}{1 + \frac{S_1}{l_d^2}} \quad (1)$$

and

$$l_s^* = \frac{l_d(1+\alpha)^{1/2}}{\left[1 + \mu_n^2 H^2 + b\alpha \left(1 + \frac{\mu_n^2 H^2}{b^2}\right)\right]^{1/2}} \quad (2)$$

hold.  $\tilde{\mu}$  denotes the Hall mobility of the carriers,  $\tau_n$  and  $\tau_p$  are the kinetic integrals,  $\alpha$  the electron-to-hole concentration ratio,  $\tau$  the relaxation time,  $S_1$  the recombination rate on an illuminated surface,  $I_0$  the number of quanta incident per  $\text{cm}^2$ ,  $l_d$  the electron diffusion length,

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Photomagnetic effect in p-type ...

b the electron-to-hole mobility ratio. In the photomagnetic effect the ratio between short-circuit current and photomagnetic emf is given by  $V_{phm} = i_s l / d \sigma$ ,  $d$  is the thickness of the sample,  $l$  the distance between the contacts and  $\sigma$  the conductivity in the magnetic field. The quantity  $i_s l / d$  was found to be between 0.01 and 0.1. For such small values the change in ambipolar diffusion length in the magnetic field from  $V_{phm1} / V_{phm2} = 1 + S_2 \sim l / d$ .  $V_{phm1}$  is the photomagnetic emf of a specimen with illuminated etched surface,  $V_{phm2}$  the emf of the same specimen whose polished surface is illuminated. The results show that the theory of photomagnetic effect which is based on the solution of the kinetic current equation fits the experimental results better than a phenomenologic theory. For thin specimens

$$\frac{V_{phm1}}{V_{phm2}} = \frac{1 - \frac{1 - e^{-kl}}{kd}}{1 - \frac{1 - e^{-kl}}{kd}} \quad (13)$$

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Photomagnetic effect in p-type ...

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B1C2/B138

holds. Hole concentration was measured as a function of acceptor concentration and was found to decrease with increasing  $p_1$ . For

$p_1 \sim 10^{16} \text{ cm}^{-3}$ ,  $\mu_p$  was found to be  $1700 \text{ cm}^2/\text{v}\cdot\text{sec}$  if the free-carrier concentration was assumed to be  $1.8 \cdot 10^{16} \text{ cm}^{-3}$ . For  $\mu_p$  theory yields

$3600 \text{ cm}^2/\text{v}\cdot\text{sec}$ . There are 6 figures and 14 references: 4 Soviet and 10 non-Soviet. The four most recent references to English-language publications read as follows: P. W. Kruse. J. Appl. Phys., 30, No. 5, 770, 1959; C. Hilsum, R. Barrie. Proc. Phys. Soc., 71, No. 460, 1958; R. N. Zitter, A. J. Strauss, A. E. Attard. Phys. Rev., 115, No. 2, 1959; G. Hilsum. Proc. Phys. Soc., 76, No. 489, 1960.

ASSOCIATION: Fiziko-tehnicheskii institut im. A. F. Ioffe AN SSSR  
Leningrad (Physicotechnical Institute imeni A. F. Ioffe  
AS USSR, Leningrad)

SUBMITTED: May 18, 1961

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X

ZOLOTAREV, V.F.; PAN'KOVA, T.F.

Unit for measuring resistance noises. Prib.i tekhn.eksp. 6  
no.5:181 S-O '61. (MIRA 14:10)

1. Fiziko-tekhnicheskii institut AN SSSR.  
(Electronic instruments)

38877  
S/161/62/004/004/021/042  
B104/B106

9,4370

AUTHORS:

Zolotarev, V. P., and Masledov, D. N.

TITLE:

Dependence of the bipolar diffusion length and of the sum of the Hall mobilities of the carriers in p-type InSb on the magnetic field strength at room temperature

PERIODICAL:

Fizika tverdogo tela, v. 4, no. 4, 1962, 977 - 982

TEXT: Samples were cut perpendicularly to the direction of crystal growth (5.1.5.0.3 mm). They were polished mechanically on one side, and electrolytically on the other. The photomagnetic emf was determined with illumination from both sides separately. The Hall coefficient of the samples examined at 190°K was between  $5.45$  and  $173,000 \text{ cm}^3/\text{Coulomb}$ ; the acceptor concentration was between  $3.6 \cdot 10^{13}$  and  $1.7 \cdot 10^{18} \text{ cm}^{-3}$ , and the Hall coefficient at room temperature was between  $-350$  and  $+3.6 \text{ cm}^3/\text{Coulomb}$ . It is concluded from experimental and theoretical results regarding the Hall mobility of carriers in a magnetic field in different scattering

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Dependence of the bipolar diffusion ...

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processes that the carriers are scattered from polar lattice vibrations, from impurity ions, from free carriers, and from acoustic vibrations. It was not possible to estimate the quantitative contributions of the various scattering mechanisms. There are 6 figures and 1 table.

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Card 2/2

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Photogalvanomagnetic phenomena in InSb at room temperature. Fiz.  
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Leningrad.  
(Hall effect) (Indium antimonide)



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(Photomagnetic effect)

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